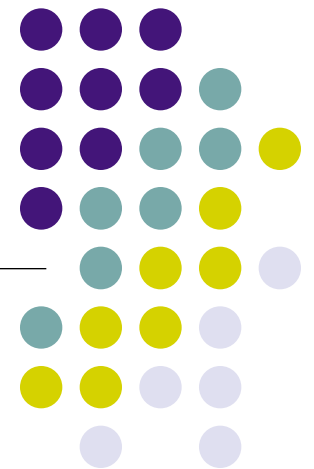# The Role of Faith Structures in Mediating Christian University Biology-Related Majors' Reconciliation of Evolution and Personal Religious Beliefs

Mark Winslow, Ph.D.
American Scientific Affiliation
Annual Meeting, July 30, 2011

# Research literature on evolution education

- Cognitive issues

- Pedagogical issues

- Subjects
  - High school students $\Rightarrow$ faculty

- Methods
  - Surveys and measures of acceptance and/or understanding
  - Limited naturalistic inquiry

# The need to further understand:

- For students at a Christian university,
  - their perspectives on creationism and evolution
  - factors that influence those perspectives
  - cognitive *and* affective framework
    - A faith development perspective

# Study Questions

- Central Question:
  - How do Christian biology-related majors at a Christian university reconcile evolution and their personal religious beliefs?

- Four Sub-questions:
  1. What factors influence participants' perspectives?
  2. What are participants' extant views?
  3. What aspects of personal religious beliefs and evolutionary theory create the dissonance?
  4. What role does participants' faith play in the reconciliation process?

# Naturalistic Methodology

- Case study design
  - Study setting
    - Christian university in the Midwest
    - Gathered data in the spring and summer of 2007

# Naturalistic Methodology

- Case study design
  - Study setting
    - Christian university in the Midwest
    - Gathered data in the spring and summer of 2007
  - Selection criteria
    - Biology-related majors…
      - who had completed the Origins course
    - Seniors and recent graduates

# Main Study Participants

- 7 seniors and 8 recent graduates
  - Demographics
    - 12 females (80%)
    - 11 were from the university denomination (73%)
- The role of the researcher

# Qualitative Data

- Two semi-structured interviews
  - Faith development
  - Creationism and evolution

- Origins course "scholarly paper"

- Evolution Attitudes Survey (Ingram & Nelson, 2006)

- Observation of the Origins course

- Qualitative data analysis
  - Most: 10 and greater, but not all
  - Many: 5 or more, but less than most
  - Some: less than 5

# Study Findings

- Participants' views

**Beliefs during childhood**

14 - Young Earth Creationism

1 - Theistic Evolution

# Study Findings

- Participants' views

**Beliefs during childhood**

14 - Young Earth Creationism

1 - Theistic Evolution

**Present views**

1 - Young Earth Creationism

1 - Progressive Creationism with elements of theistic evolution

Accepted Human Evolution

13 - Theistic Evolution

# Influences on participants' views

- Parents were a strong influence.
  - Most raised them to believe in young earth creationism.
  - And many parents continued to actively pressure them to reject evolution.
    - Rachel:
      - *I have to ask God to give me patience to not hate the men who cause me and my dad to argue about origins. I think that if they could just realize that science is not out to destroy God, then maybe they would give it a chance.*

# Influences on participants' views

- Professors were influential role models.
  - Many participants respected professors who…
    - were genuine and forthright in presenting evolution in a Christian context.
    - demonstrated a commitment to both science and religious beliefs.
      - Rachel: *You knew she believed it [about God],. . . but then she also talked about evolution and so you kinda had to reconcile the two. . . . My whole life, it was just two things that were separate and they must stay separate, but with her they kinda came together and you had to reconcile them.*

# Participants' reconciliation

- Most participants' acceptance of evolution was a process of conflict resolution and apprehension.
  - Ashley:
    - *Now do you see what I mean about being blindsided or bombarded with things that for 18 or 19 years you've held true? I mean, to me, it's almost like for 23 years believing that my mom and my dad are my parents and then one day, them saying, 'No, you're adopted.' That's kinda like what it was to me. Just this truth for so long and then you're just like, 'What?!'* **That's how out of the blue it was to me**.
    - Learning about evolution "*was a culmination of your thoughts for so many years being shattered and then you're picking pieces here and there and adding your own.*"

# Participants' reconciliation

- Four factors facilitated participants' acceptance of evolution:

  1. Evidence for evolution

  2. Negotiating Genesis creation narratives as non-literal

  3. Recognizing that an acceptance of evolution and salvation are unlinked

  4. Observing Christian professors model a commitment to evolution

# Participants' reconciliation

- Though these are not scientific issues…
    - participants had to deal with the theological ramifications of an acceptance of evolution
- Participants…
    - postulated teleological purpose
    - pragmatically approached theodicy
    - affirmed a belief in the soul

# The need to further understand:

- For students at a Christian university,
  - their perspectives on creationism and evolution
  - factors that influence those perspectives
  - cognitive *and* affective framework
    - A faith development perspective

# James Fowler & Faith Development

- Faith:

    - Cognitive rationale and affective response in shaping and making meaning of one's world

    - "One's convictions of the ultimate character of truth, of self, of world."

        (Parks, 1986, p. xv).

# Fowler and Faith Development

- Stages 1 – 6
- Aspects:
  - Form of logic
  - Social awareness
  - Moral judgment
  - Locus of authority
  - Etc.

- Stage 3: synthetic-conventional
- Stage 4: individuative-reflective

# Fowler and Faith Development

- Stage 3: synthetic-conventional
  - conformist, interpersonal relationships
  - authority lies in significant others
  - accepting of group values and conventions
  - tacit, dualistic beliefs
- Stage 4: individuative-reflective
  - critical reflection of personal identity and beliefs
  - explicit values system
  - authority within self

# Parks and Young Adult Faith

- Stage 3: synthetic-conventional

- Stage 3.5: young adult faith
  - Relativism
  - Recognition of complexity and multiplicity
  - Equilibrated position
    - Negotiated beliefs
    - Stronger sense of self
    - More open to diverse groups

- Stage 4: individuative-reflective

# Faith and reconciliation

- Faith Stages
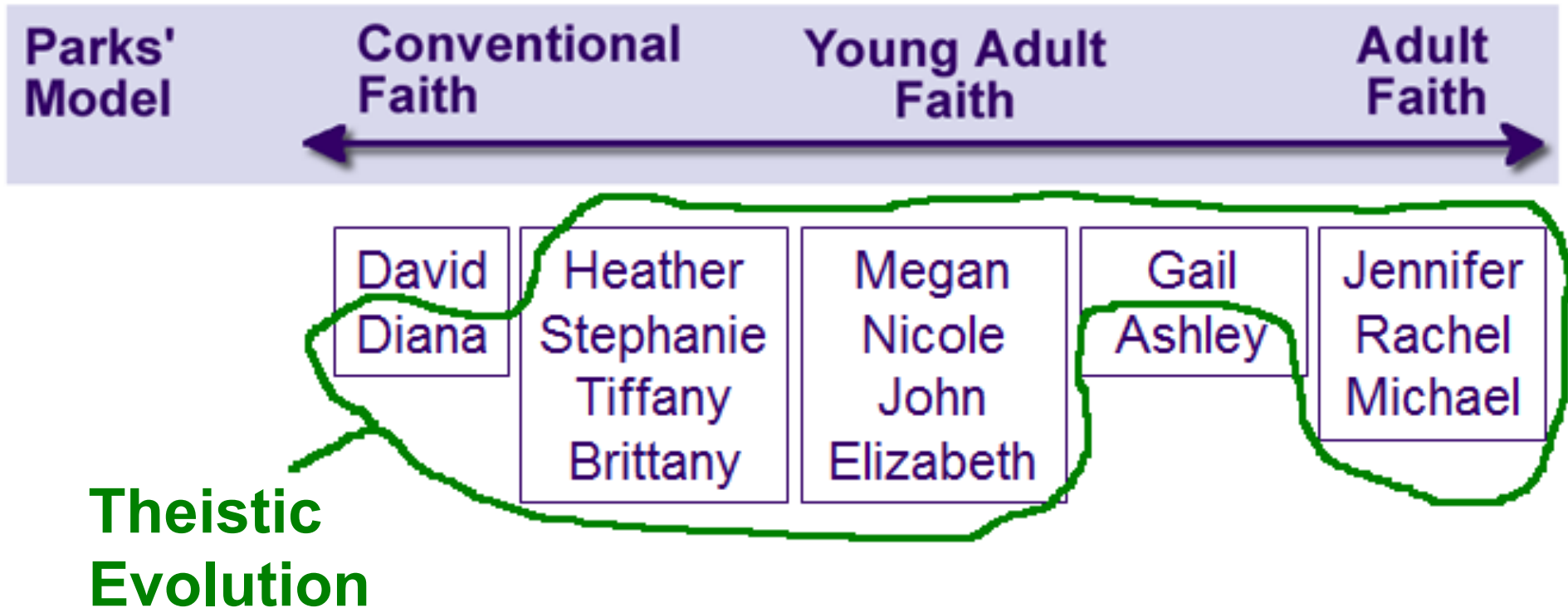
| Parks' Model | Conventional Faith | Young Adult Faith | | Adult Faith |
|---|---|---|---|---|
| | David<br>Diana | Heather<br>Stephanie<br>Tiffany<br>Brittany | Megan<br>Nicole<br>John<br>Elizabeth | Gail<br>Ashley |

Jennifer
Rachel
Michael

# Faith and reconciliation

- Faith Stages

| Parks' Model | Conventional Faith | Young Adult Faith | Adult Faith |
|---|---|---|---|

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| David Diana | Heather Stephanie Tiffany Brittany | Megan Nicole John Elizabeth | Gail Ashley | Jennifer Rachel Michael |
|---|---|---|---|---|

**Theistic Evolution**

# Faith and reconciliation

- Faith Stages

| Parks' Model | Conventional Faith | Young Adult Faith | | Adult Faith |
|---|---|---|---|---|
| | David | Heather | Megan | Gail | Jennifer |
| | Diana | Stephanie | Nicole | Ashley | Rachel |
| | | Tiffany | John | | Michael |
| | | Brittany | Elizabeth | | |

**YEC**

**Theistic Evolution**

**Progressive Creationism**

# Conventional-Synthetic Faith

- David (Conventional Faith)
  - Little tolerance for ambiguity
  - Lack of perspective-taking
  - Fear of change
    - Atheistic effects on society

- Adult faith stage participants
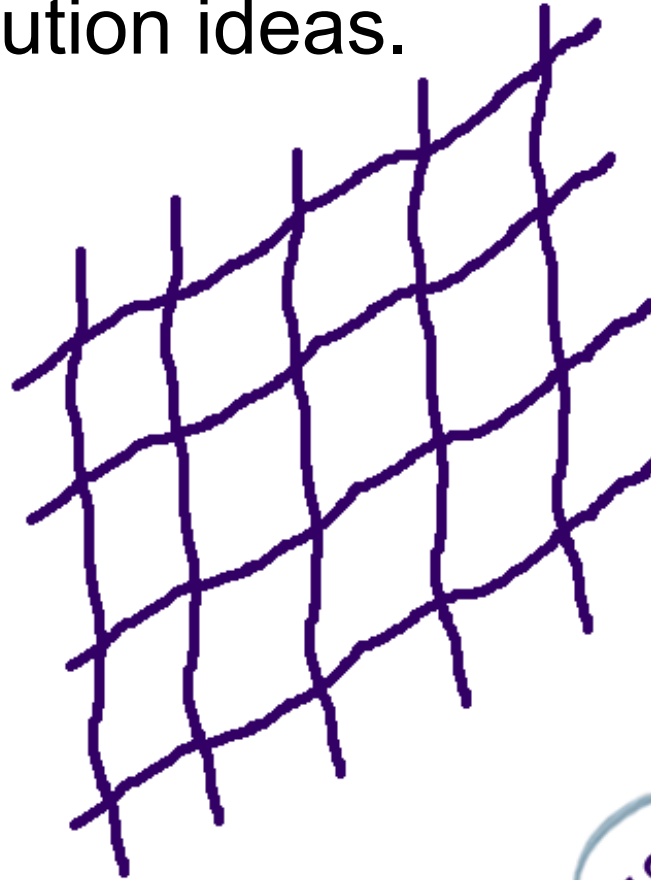
# Faith and Reconciliation

| Adult faith participants… | |
|---|---|
| Some conventional faith participants… | |

- David's Mental Filter
  - assimilated anti-evolution ideas
  - ignored evidence for evolution

# David's mental filter…
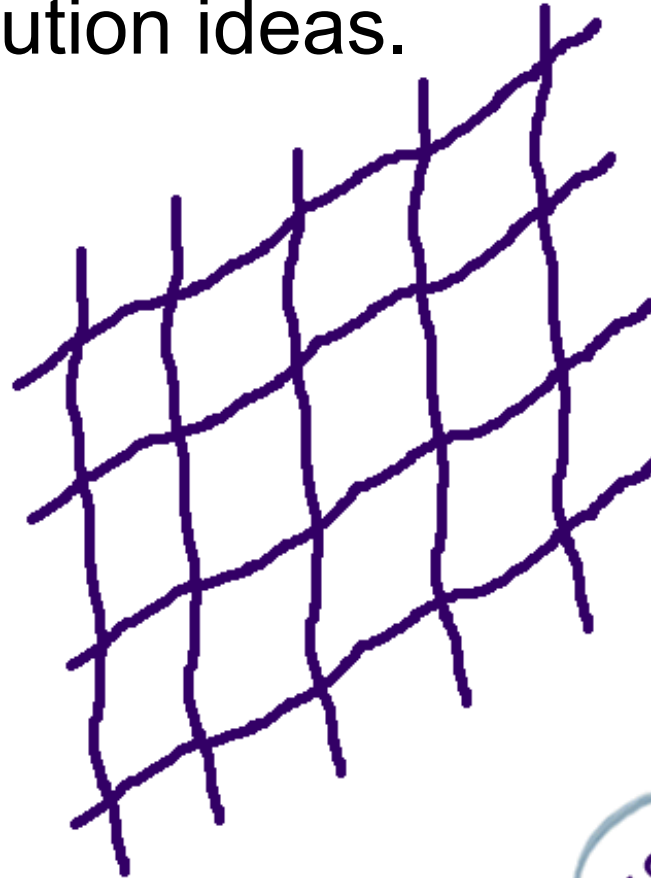
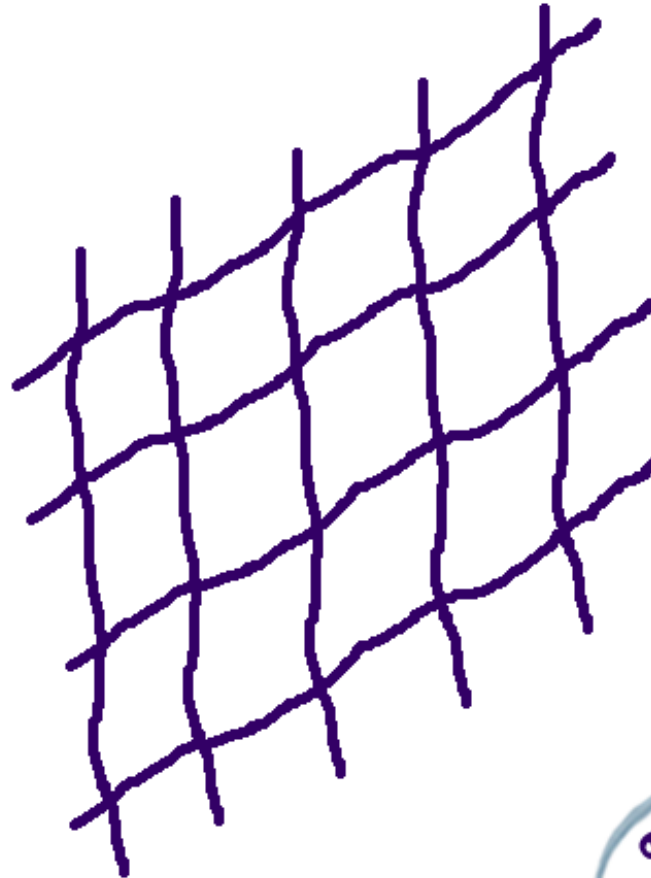- assimilates anti-evolution ideas.

# David's mental filter…

- assimilates anti-evolution ideas.
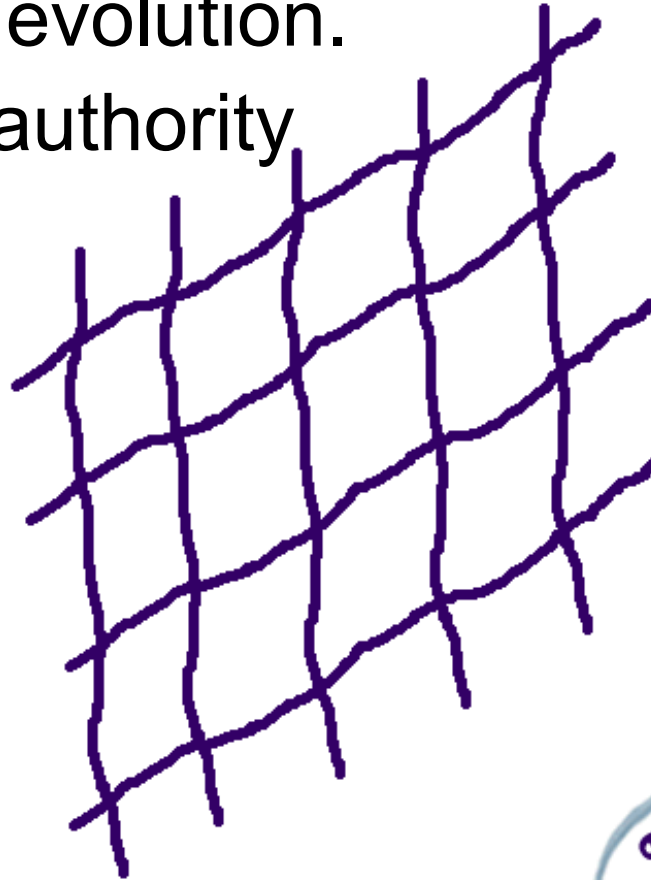
# David's mental filter…

- ignores evidence for evolution.

# David's mental filter…

- ignores evidence for evolution.
- also with sources of authority

David: *I follow [the] Bruce Lee Philosophy: keep what is useful, discard what is useless.*

Evidence for evolution

# Faith and reconciliation

| Adult faith participants… | |
|---|---|
| Some conventional faith participants… | |

# Accommodation and assimilation



Start → Existing ideas → New encounter → Sorting through recall
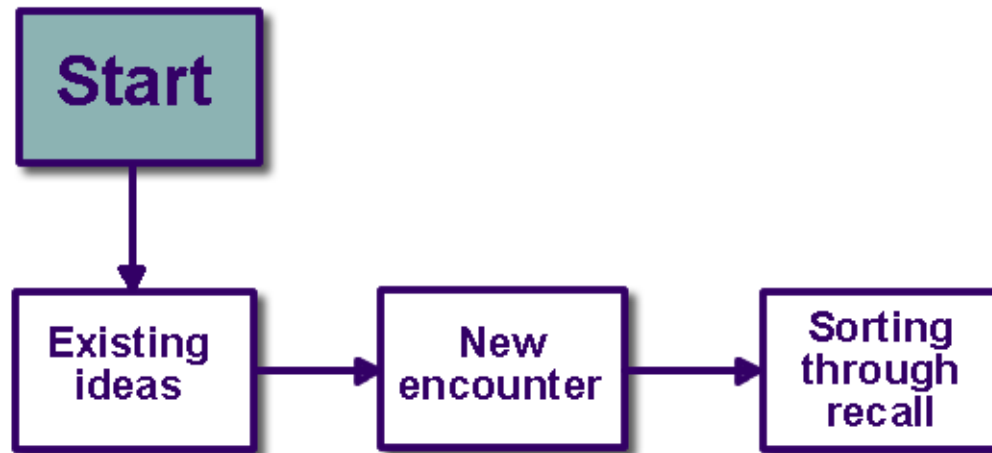
Adapted from Appleton (1993)

# Accommodation and assimilation
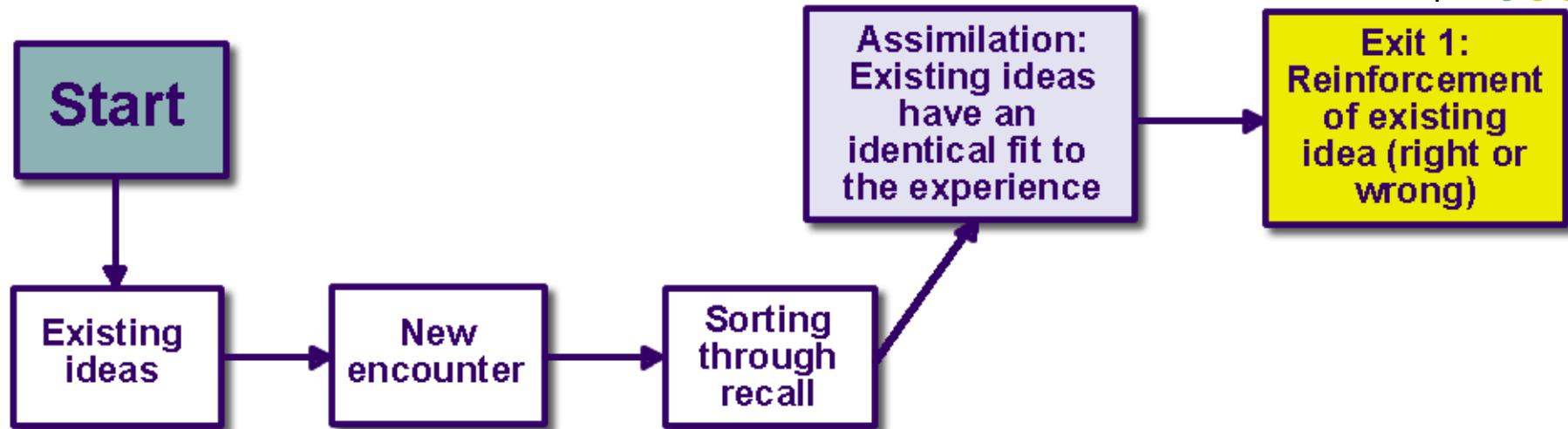


By the time of the Origins course:

- Michael: *"[Evolution] didn't worry me. . . . If it matches the rest of your faith, then there's not much to be scared of."*

Adapted from Appleton (1993)

# Accommodation and assimilation

```
┌──────────┐
│  Start   │
└────┬─────┘
     │
     ▼
┌──────────┐     ┌──────────┐     ┌──────────┐
│ Existing │ ──▶ │   New    │ ──▶ │ Sorting  │
│  ideas   │     │ encounter│     │ through  │
│          │     │          │     │  recall  │
└──────────┘     └──────────┘     └────┬─────┘
```

**Assimilation:** Existing ideas have an identical fit to the experience → **Exit 1:** Reinforcement of existing idea (right or wrong)

**Disequilibrium:**
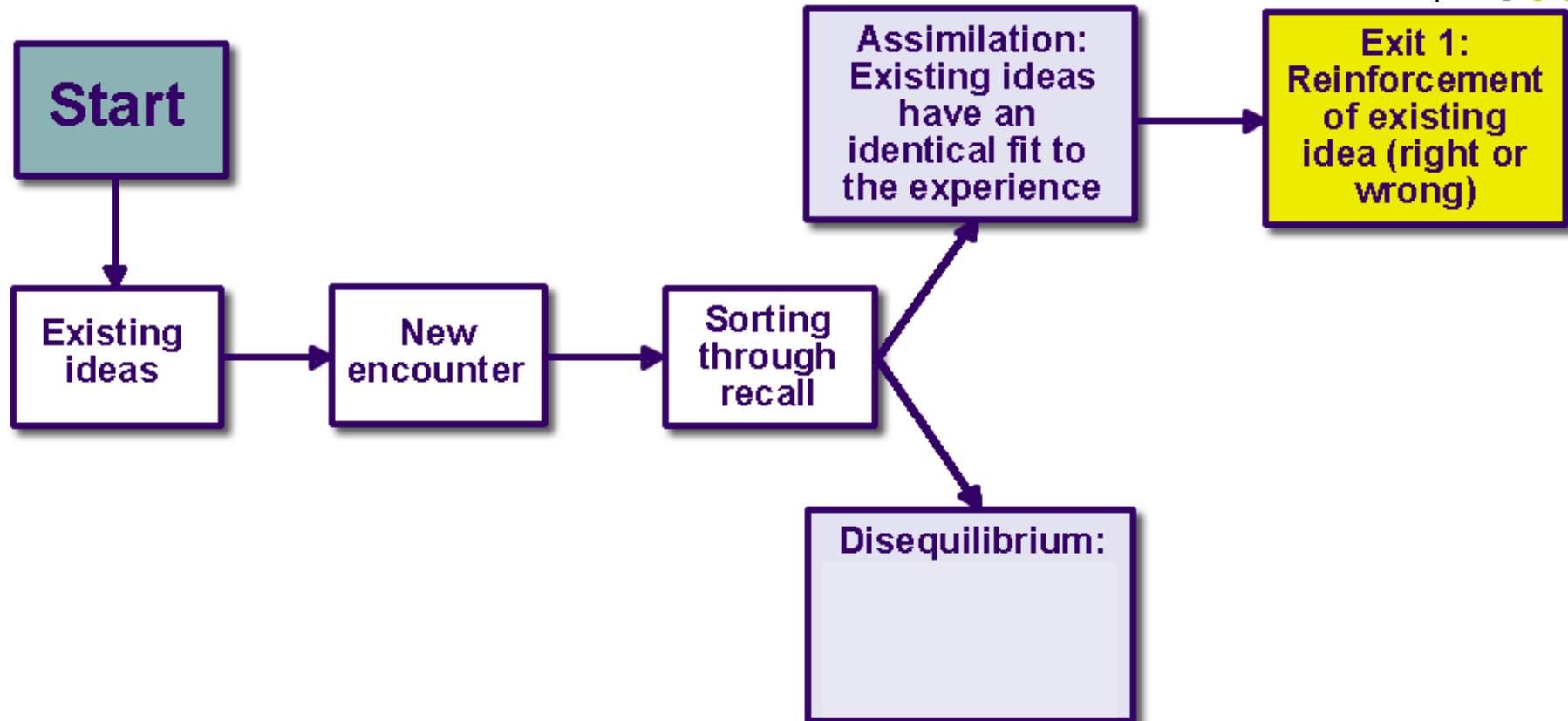
# Accommodation and assimilation
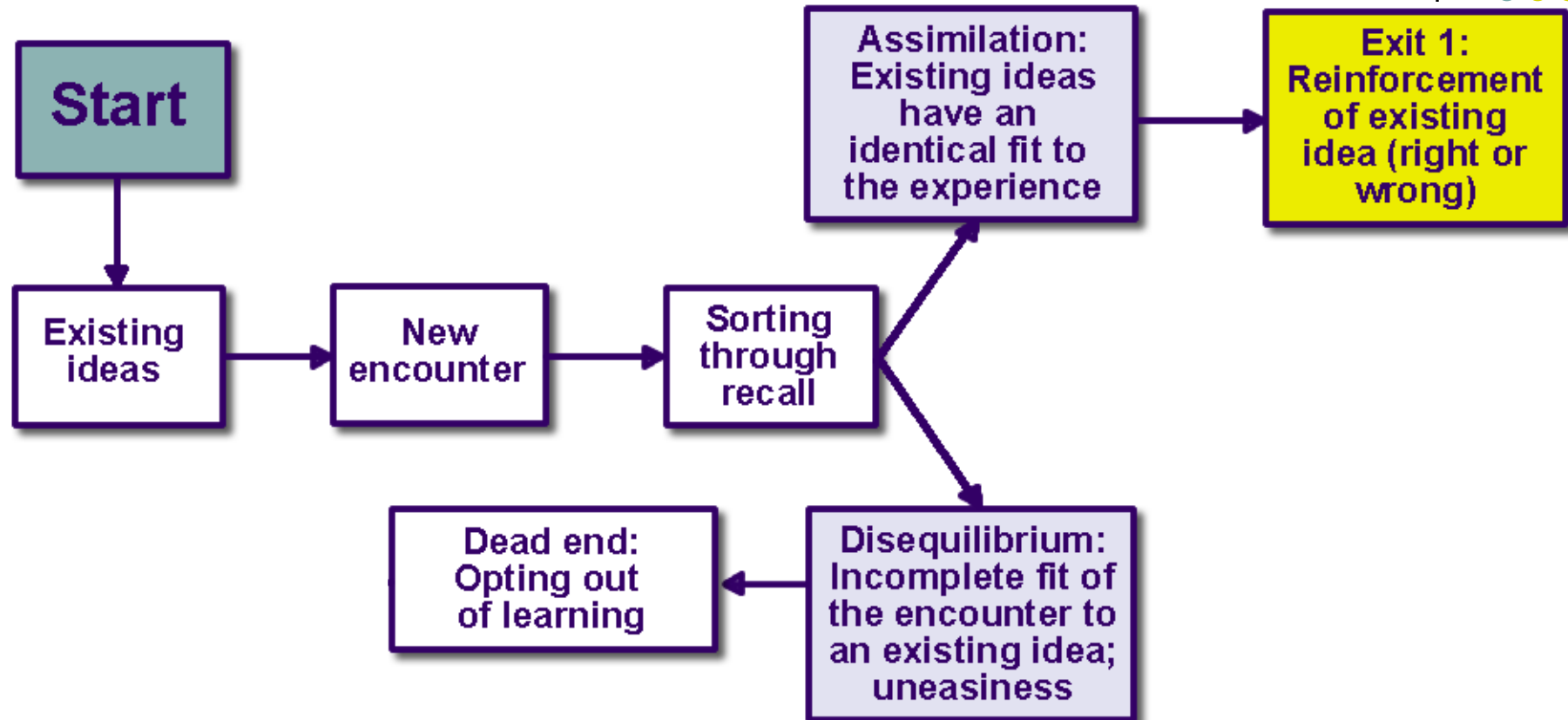


David: *"Especially as much as I had already read, I already knew all the points [of] evolution they were going to bring up and . . . the supposed facts they were trying to bring up to support it. It didn't hold "*

# Accommodation and assimilation



Start → Existing ideas → New encounter → Sorting through recall → Disequilibrium: Incomplete fit of the encounter to an existing idea; uneasiness → Dead end: Opting out of learning → Exit 2: Existing ideas unchanged

Disequilibrium → False Accommodation: Ascertaining the right answer

Adapted from Appleton (1993)
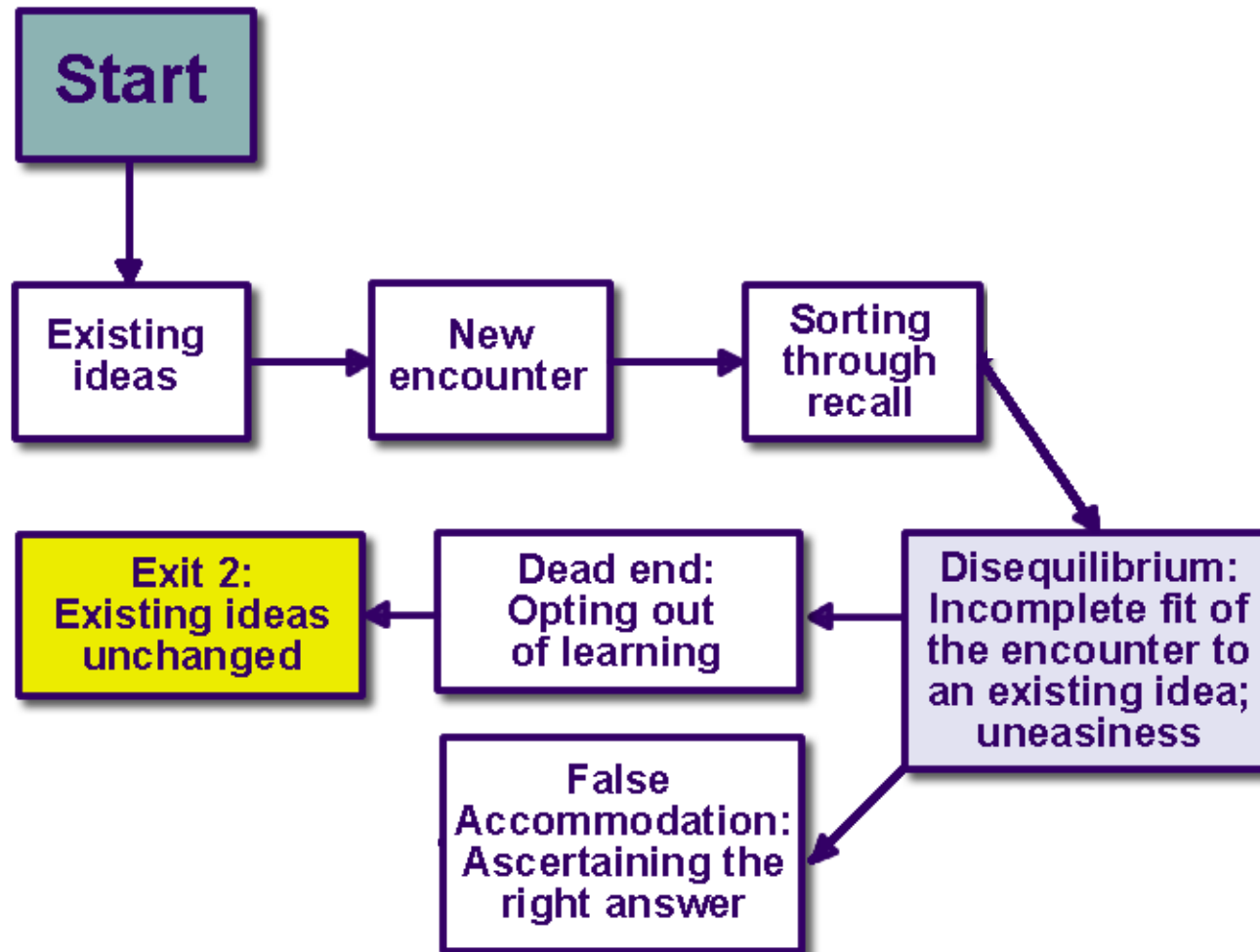
# Accommodation and assimilation
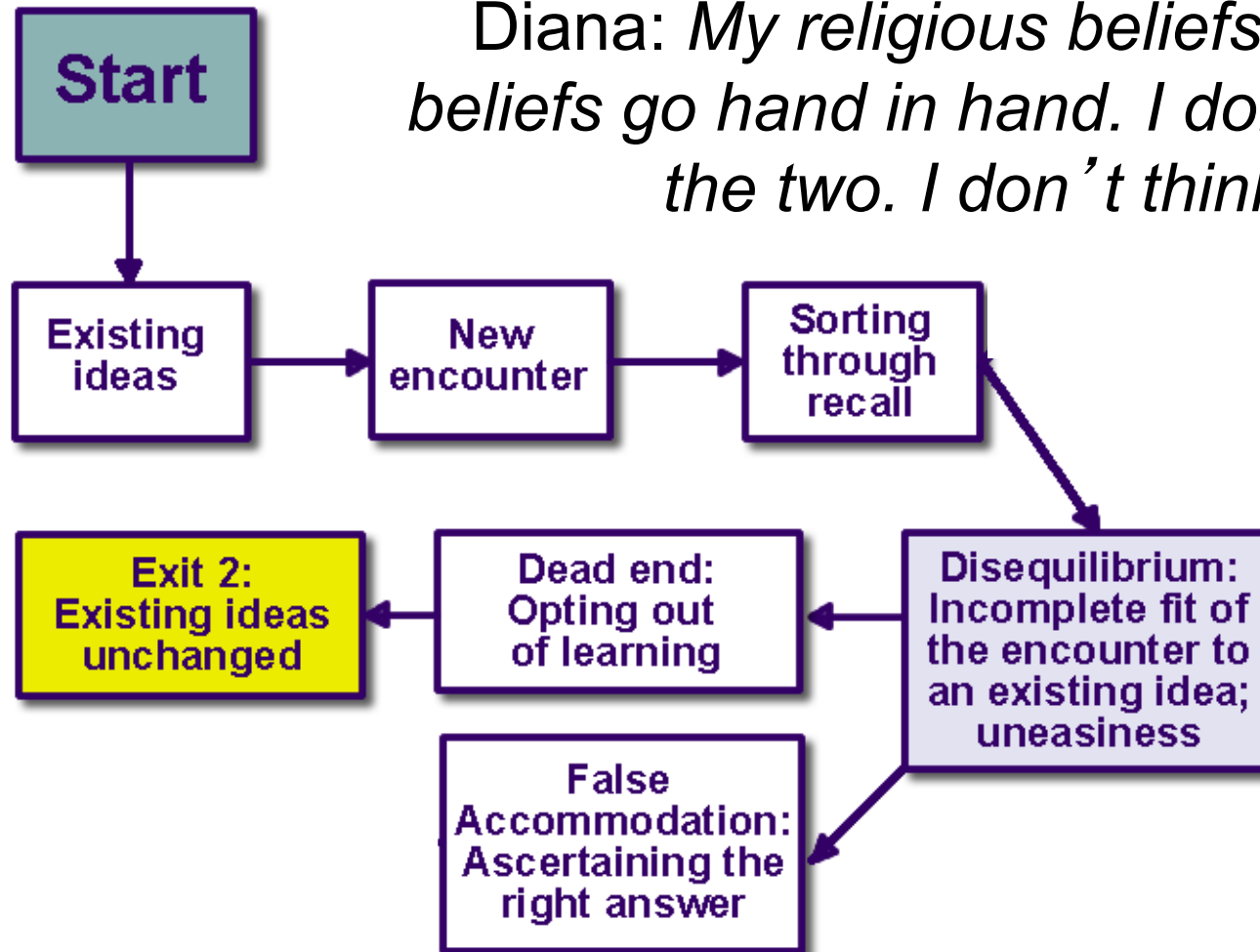
Diana: *My religious beliefs and my scientific beliefs go hand in hand. I don't ever separate the two. I don't think that they're two different worlds. …This world is all one big science and religion ball. … It works together.* **It has to.**

Start

Existing ideas → New encounter → Sorting through recall

Disequilibrium: Incomplete fit of the encounter to an existing idea; uneasiness

Dead end: Opting out of learning

Exit 2: Existing ideas unchanged

False Accommodation: Ascertaining the right answer
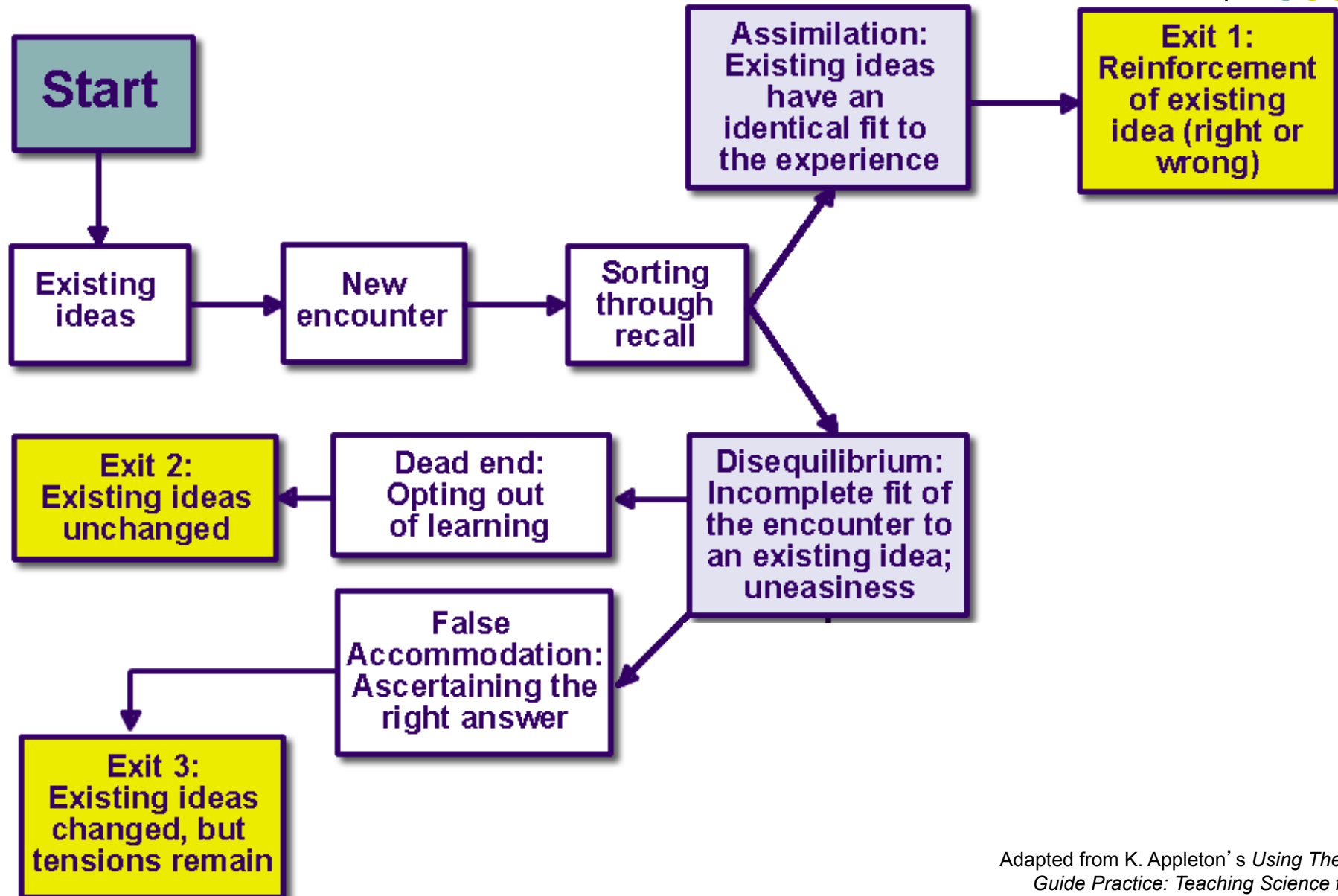
# False Accommodation

Diana: *I don't think you should just null and void chapter one through eleven. No, it's not like that. I think that science starts at day one, Genesis one.  And the Bible starts at Genesis one and there's no just taking that part out.*

*It's not – I think that it all happened, and it all happened in some way, shape, or form, and there's a way to explain it. **There has to be**, and I believe that.*

*And I think that it's something that I would have to study way more into. But, I'm just – I don't know. I just – I don't know.*

# Accommodation and assimilation

Start

Existing ideas → New encounter → Sorting through recall

Assimilation: Existing ideas have an identical fit to the experience → Exit 1: Reinforcement of existing idea (right or wrong)

Disequilibrium: Incomplete fit of the encounter to an existing idea; uneasiness

Dead end: Opting out of learning → Exit 2: Existing ideas unchanged

False Accommodation: Ascertaining the right answer → Exit 3: Existing ideas changed, but tensions remain
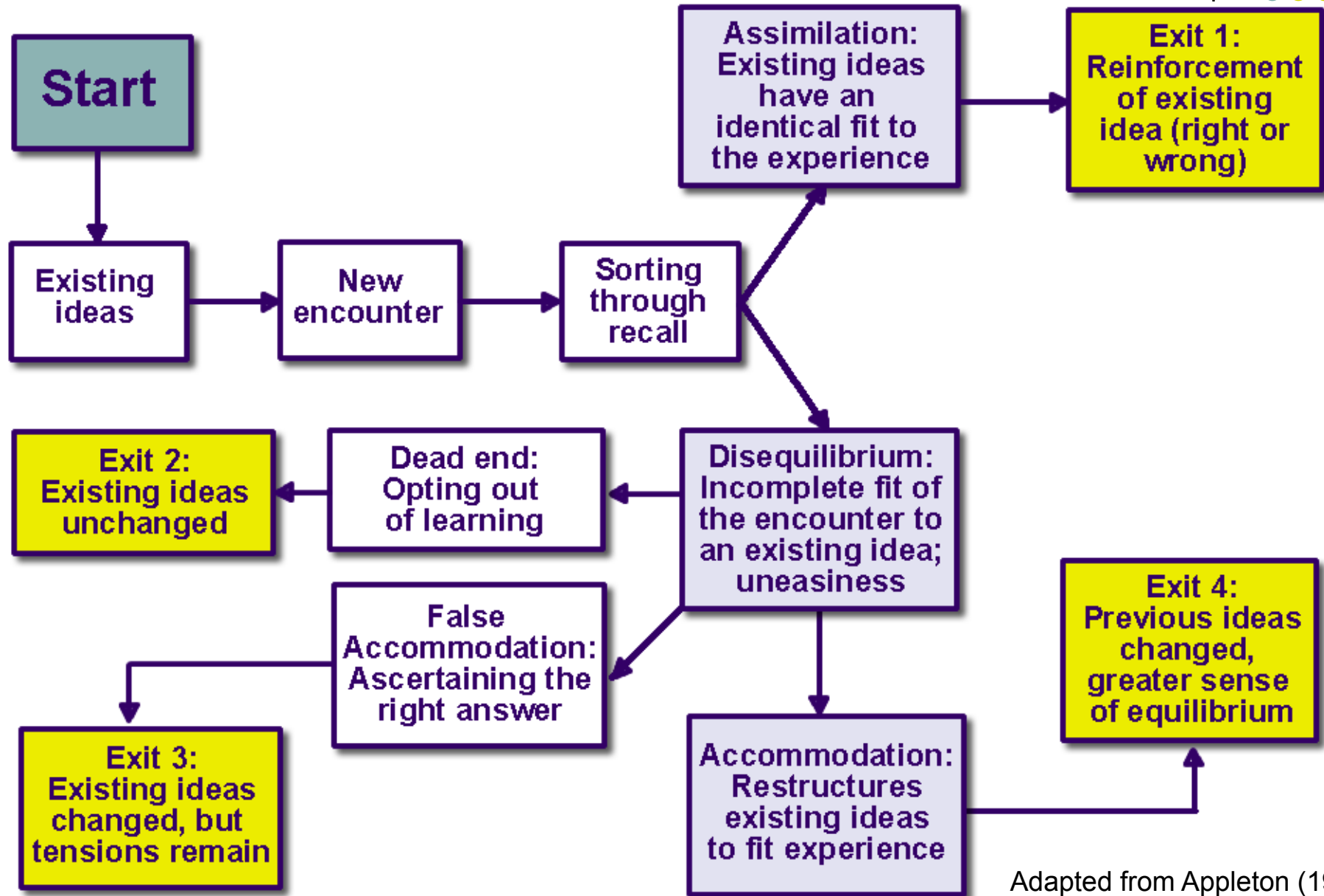
Adapted from K. Appleton's *Using Theory to Guide Practice: Teaching Science from a Constructivist Perspective*, (1993).
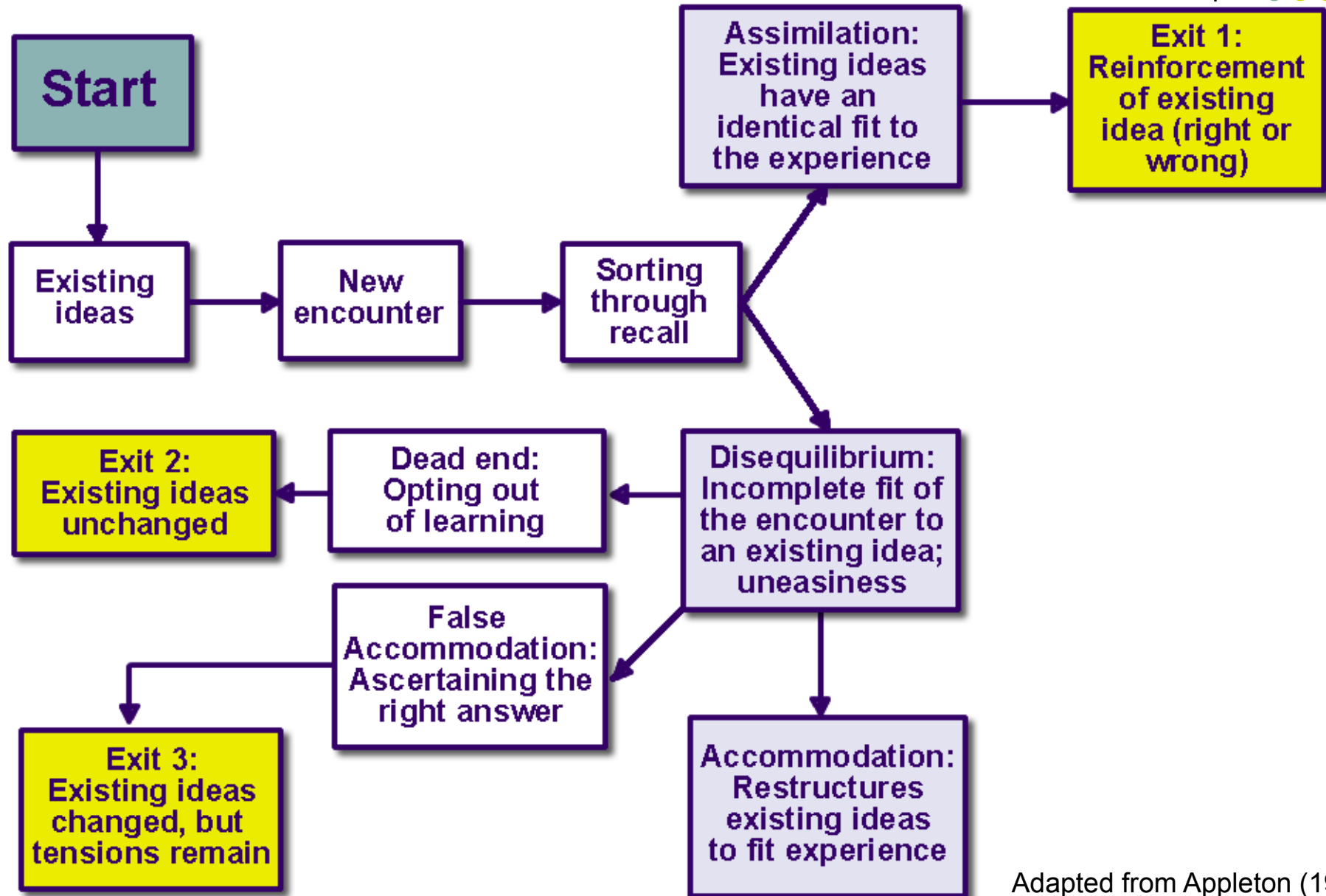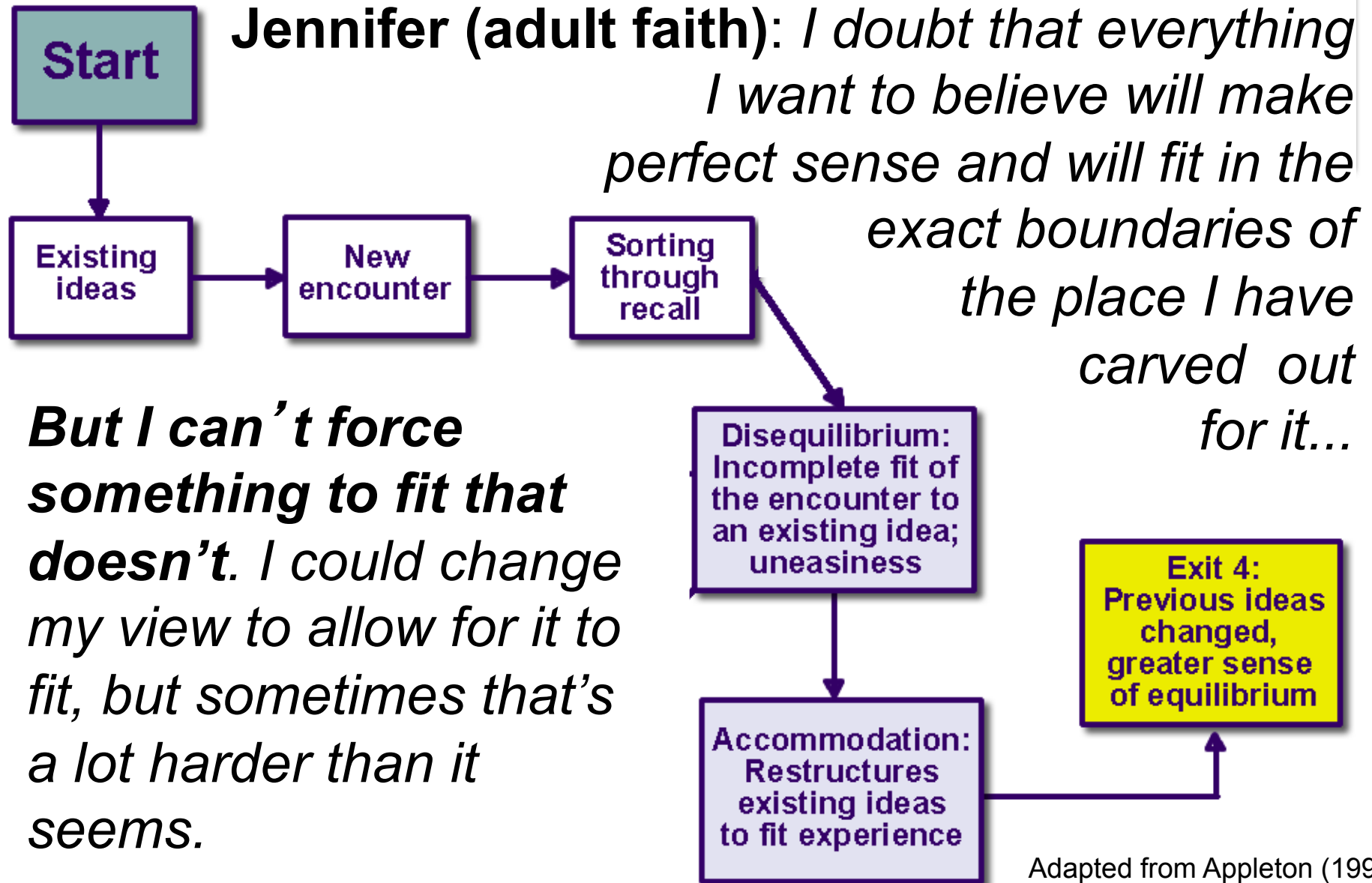
# Accommodation and assimilation



Adapted from Appleton (1993)

# Accommodation and assimilation



Start

Existing ideas → New encounter → Sorting through recall

Assimilation: Existing ideas have an identical fit to the experience → Exit 1: Reinforcement of existing idea (right or wrong)

Disequilibrium: Incomplete fit of the encounter to an existing idea; uneasiness

Dead end: Opting out of learning → Exit 2: Existing ideas unchanged

False Accommodation: Ascertaining the right answer → Exit 3: Existing ideas changed, but tensions remain

Accommodation: Restructures existing ideas to fit experience → Exit 4: Previous ideas changed, greater sense of equilibrium

Adapted from Appleton (1993)

# Accommodation and assimilation

**Start**

**Existing ideas** → **New encounter** → **Sorting through recall**

**Jennifer (adult faith)**: *I doubt that everything I want to believe will make perfect sense and will fit in the exact boundaries of the place I have carved out for it...*

**Disequilibrium:** Incomplete fit of the encounter to an existing idea; uneasiness

**But I can't force something to fit that doesn't**. *I could change my view to allow for it to fit, but sometimes that's a lot harder than it seems.*

**Accommodation:** Restructures existing ideas to fit experience

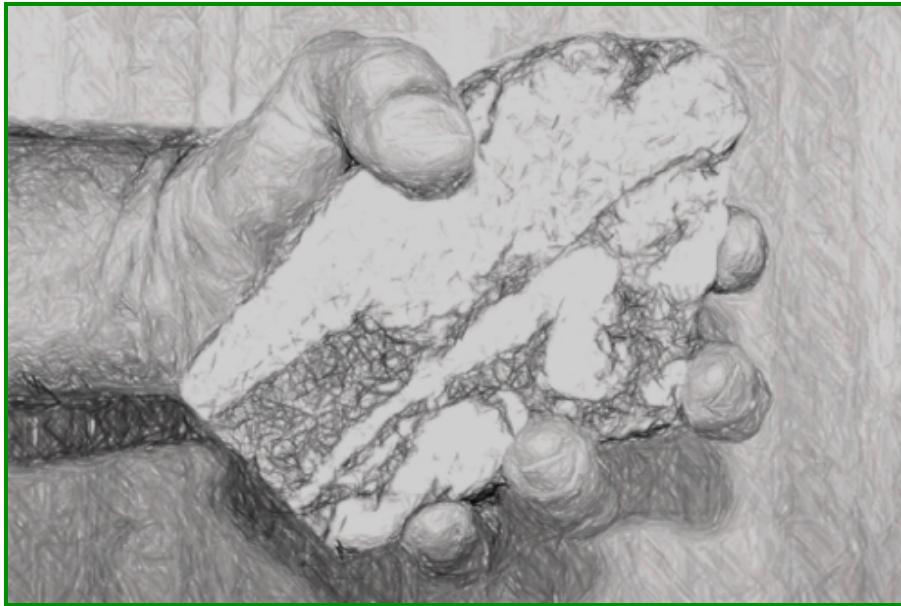**Exit 4:** Previous ideas changed, greater sense of equilibrium

Adapted from Appleton (1993)

# Evolution in the participant's mind

"Even one's grip has to accommodate to a stone, while clay is assimilated into our grip." (Boeree, 2003)


Clay


Stone

# Relevance in higher education

- For university professors:
  - The importance of the **role model**
    - Open and honest dialog
      - Complexities in relationship of science and religious beliefs
      - Theological ramifications

# Relevance in higher education

- For university professors:
  - The importance of the **role model**
    - *"Students need . . . to gain a realistic look at life and to discover for themselves the questions that confront us. They need to work their way painfully though the maze of alternative ideas and arguments while finding out how the Christian [religious] faith speaks to such matters. They need a teacher as a catalyst and guide."*

(p. 46, Holmes, 1987).

# Relevance in higher education

- For university professors:
    - The role of **faith development** in the reconciliation process
- What about faith?
    - Means of understanding
    - *"Learning is enhanced when teachers pay attention to the knowledge and beliefs that learners bring to a learning task, use this knowledge as a starting point for new instruction, and monitor students' changing conceptions as instruction proceeds."*

(National Academy Press, 2000)

# Relevance in higher education

- What about faith?
  - Patience!
    - Easy to forget:
      - Not an easy task
      - Takes time

# Relevance in higher education

- What about faith?

    - ***It should never be the primary goal of religious education simply to precipitate and encourage stage advancement.*** *Rather, paying attention to [faith] . . . is important in helping us shape our teaching. . . .*

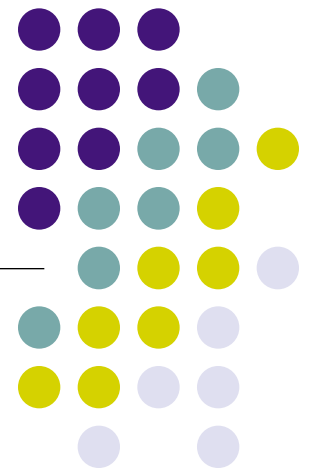        (p. 417, Fowler, 2004)

# Concluding Remarks

- Seeking God's Wisdom
        for Science Teaching

# Thank you...

Any questions?

# References

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